

We claim:

1. An all optical chopping device for shaping and reshaping comprising:
an all optical AND logic gate having a first input for receiving a first optical signal, a second input for receiving a second optical signal and at least one output,
wherein said AND gate is arranged to produce at said at least one output an optical output signal corresponding to a portion of the AND product of said first optical signal and said second optical signals, and
wherein said optical output signal is narrower than at least one of said first optical signal and said second optical signal.
2. The device of claim 1 wherein said first optical signal and said second optical signal are delayed relative to each other.
3. The device of claim 2 where in said delay is shorter than one of said first optical signal and said second optical signal.
4. The device of claim 1 wherein said first optical signal differs from said second optical signal.
5. The device of claim 1 wherein said device further includes a splitter for receiving and splitting a third optical signal into said first optical signal and said second optical signal.
6. The device of claim 1 wherein said first optical signal and said second optical signal are the split optical components of a forth optical signal.

7. The device of claim 1 wherein said first optical signal and said second optical signal arrive from different sources.
8. The device of claim 1 wherein said first optical signal and said second optical signal arrive from the same source.
9. The device of claim 1 wherein said one of said first input and said second input includes an optical delay line.
10. The device of claim 1 wherein said one of said first input and said second input includes an optical amplifier.
11. The device of claim 1 wherein said device further includes a closed loop phase control.
12. The device of claim 1 wherein said device further includes a closed loop synchronization control.
13. The device of claim 1 wherein said optical output signal produced by head chopping of one of said first optical signal and said second optical signal.
14. The device of claim 1 wherein said optical output signal produced by tail chopping of one of said first optical signal and said second optical signal.
15. The device of claim 1 wherein said optical output signal has the same width as one of said first optical signal and said second optical signal.
16. The device of claim 1 wherein said first optical signal and said second optical signal are coherent.
17. The device of claim 1 wherein said AND logic gate includes a summing gate selected from a group of summing gates containing beam splitters dielectric

beam splitters metallic beam splitters dual gratings interleaved arrays of waveguides and dense dual gratings.

18. The device of claim 1 wherein said AND logic gate includes a threshold device.

19. The device of claim 1 wherein said AND logic gate includes an optical loop

20. The device of claim 1 wherein said AND logic gate includes a non linear optical loop.